

### Day 89

Q. You are given  $N$  integers. In each step you can choose some  $K$  of the remaining numbers and delete them, if the following condition holds: Let the  $K$  numbers you've chosen be  $a_1, a_2, a_3, \dots, a_K$  in sorted order. Then, for each  $i \leq K - 1$ ,  $a_{i+1}$  must be greater than or equal to  $a_i * C$ . You are asked to calculate the maximum number of steps you can possibly make.

main.cpp

```
#include <bits/stdc++.h>
#define ll long long
#define INF 1e18
using namespace std;

vector<ll> nums;
int T, N, K, C;
int lo, mid, hi, X;

bool check(int L) {
    vector<ll> v[L];
    int i=0;

    for(auto num: nums) {
        if(v[i].size()==K) {
            break;
        }
        if(v[i].size()==0 || ( v[i].back()<INF/C && v[i].back()*C<=num)) {
            v[i].push_back(num);
            i = (i+1)%L;
        }
    }

    return v[L-1].size() == K;
}

int main() {
    ll num;
    cin>>T;

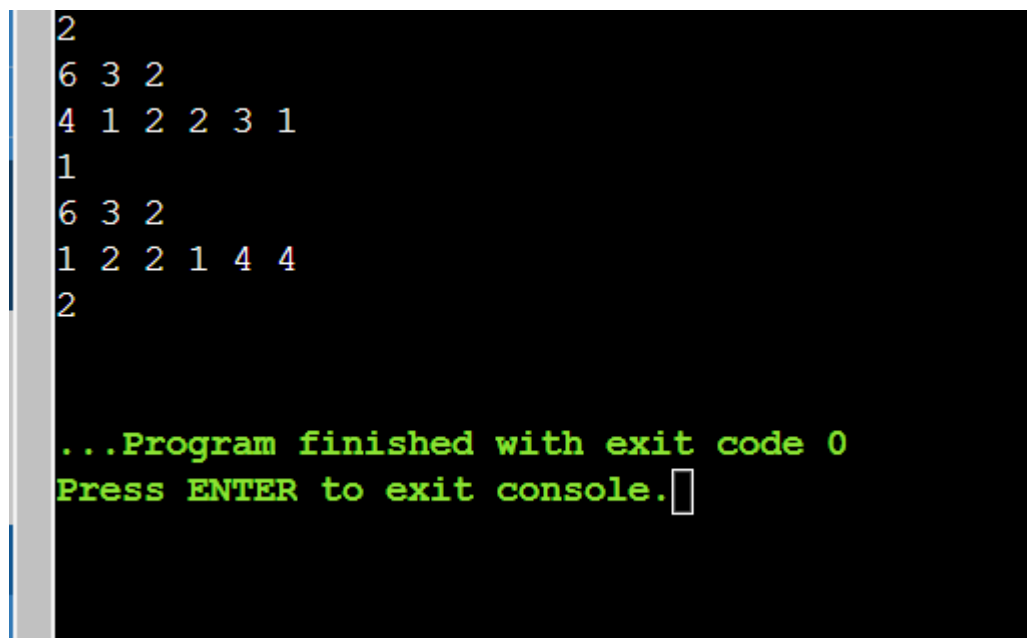
    while(T--) {
        cin>>N>>K>>C;
        nums.clear();
        while(N--) {
            cin>>num;
            nums.push_back(num);
        }

        sort(nums.begin(), nums.end());
```

```
X = 0;
lo = 1;
hi = nums.size()/K;

while(lo<=hi) {
    mid = (lo+hi)/2;
    if(check(mid)) {
        X = mid;
        lo = mid+1;
    }
    else {
        hi = mid-1;
    }
}
cout<<X<<endl;
}
return 0;
}
```

output



```
2
6 3 2
4 1 2 2 3 1
1
6 3 2
1 2 2 1 4 4
2

...Program finished with exit code 0
Press ENTER to exit console.█
```